Ex3. Count Them

A dna strand with text

Description automatically generated

**Overview**

Given a string �*G* representing a gene sequence and a set �*S* of gene fragments, count the number of ways we can split �*G* to fragments that are in �*S*.

**Examples**

**Example 1**

G = "TAAGT"

S = {"TA", "TAA", "AG", "AGT", "GT"}

There are only two ways to split G: TA-AGT or TAA-GT

**Example 2**

G = "GATTAG"

S = {"G", "GA", "GAT", "AG", "AGT", "AT", "ATTA", "AT", "TA", "TAG"}

There are 55 ways to split G:

G-AT-TA-G

G-AT-TAG

G-ATTA-G

GAT-TAG

GAT-TA-G

**Example 3**

G = "GATTAG"

S = {"G", "GA", "GAT", "GATT"}

There are 00 ways for splitting G.

**Example 4**

G = "GATTAG"

S = {"GATTAG", "GA", "GAT", "GATT"}

There is 11 way for splitting G (G is a fragment in S).

**Assignment Requirements**

Modify fragments.cpp to implement function long long **count\_splits**(string gene, set<string> fragments).

You can assume that the result of the function will always fit in a long long variable.

**Hints**

* Check the [set](https://en.cppreference.com/w/cpp/container/set) and [string](https://en.cppreference.com/w/cpp/string) documentations.
* This problem requires solving (potentially) many subproblems (i.e. not only two or three as in other problems you saw in class.